

MONTHLY NOTICES

OF THE

ROYAL ASTRONOMICAL SOCIETY.

VOL. LX. FEBRUARY 9, 1900. No. 5

Professor G. H. DARWIN, M.A., LL.D., F.R.S., PRESIDENT,  
in the Chair ;

William Henry Robinson, Offendene, Walsall, Staffordshire,  
was balloted for and duly elected a Fellow of the Society.

The following Candidate was proposed for election as a  
Fellow of the Society :—

Thomas C. Bush, Somerville, Wells Road, Bath (proposed  
from personal knowledge by the Rev. D. Higham Sparling).

REPORT OF THE COUNCIL TO THE EIGHTIETH ANNUAL  
GENERAL MEETING OF THE SOCIETY.

The following table shows the progress and present state of  
the Society :—

	Compounders	Annual Subscribers	Total Fellows	Associates	Patron	Grand Total
1898 December 31 ... ..	247	388	635	44	I	680
Since elected ... ..	+ 6	+ 21	...	+ 4	...	...
Deceased ... ..	— 3	— 11	...	...	...	...
Resigned ... ..	...	— 7	...	...	...	...
Removals ... ..	+ 3	— 3	...	...	...	...
Expelled ... ..	...	— 6	...	...	...	...
1899 December 31 ... ..	253	382	635	48	I	684

Y

*Mr. Knobel's Account as Treasurer of the Royal*

## RECEIPTS.

Balances, 1899 January 1:—	£	s.	d.	£	s.	d.
At Bankers', as per Pass-book ... ..	542	16	3			
Cheques not credited till 1899 ... ..	6	6	0			
In hand of Assistant Secretary on account of Turnor and Horrox Fund ... ..	2	18	2			
In hand of Assistant Secretary on Petty Cash Account ... ..	13	6	1			
				565	6	6
Three quarters' Dividends on £13,200 Consols, 2½ per cent. ... ..	263	3	9			
Dividends on £1,250 Metropolitan 3-per-cent. Stock	36	5	0			
„ £932 19 0 Metropolitan 2½-per-cent. Stock ... ..	22	11	0			
One quarter Dividend on £3,400 East Indian Rail- way 3-per-cent. Debenture Stock ... ..	24	13	0			
Half-year Dividend on £1,100 Commercial Gas Company 4½-per-cent. Debenture Stock ...	23	18	6			
Interest received from Brokers for Stock not delivered ... ..	18	11	7			
				389	2	10
Received on account of Subscriptions:—						
Arrears ... ..	155	8	0			
Annual Contributions for 1899 ... ..	594	6	0			
„ „ 1900 ... ..	6	6	0			
Admission Fees ... ..	56	14	0			
First Contributions ... ..	38	17	0			
				851	11	0
Composition Fees ... ..				168	0	0
Sales of Publications:—						
At Williams and Norgate's, 1898 ... ..	16	3	6			
At Society's Rooms, 1899 ... ..	61	13	0			
Sales of Photographs, 1899 ... ..	23	9	6			
				101	6	0
Received from Mrs. Knott in aid of Expenses of Printing <i>Memoirs</i> , vol. lii. ... ..				250	0	0
Income Tax refunded by Commissioners of Inland Revenue ... ..				14	2	0

Audited and found correct, January 19, 1900,

RICHARD INWARDS,  
W. B. GIBBS.£2,339 8 4

*Astronomical Society, from 1899 January 1 to December 31.*

## EXPENDITURE.

	£	s.	d.	£	s.	d.
Assistant Secretary: Salary ... ..	250	0	0			
"    "    for assistance in editing Society's Publications ... ..	50	0	0			
				300	0	0
House Duty ... ..	2	12	6			
Fire Insurance ... ..	9	9	6			
				12	2	0
Printing, &c., <i>Monthly Notices</i> ... ..	353	17	3			
" <i>Memoirs</i> , vol. lii. ... ..	366	15	6			
"    "    vol. liii. ... ..	338	5	0			
"    List of Fellows and Miscellaneous ... ..	24	5	0			
Engraving Blocks for <i>Monthly Notices</i> ... ..	4	17	6			
				1,088	0	3
Computation of Ephemerides ... ..				15	0	0
Reproduction of Photographs ... ..				15	8	4
Turnor and Horrox Fund: Purchases for Library	7	18	2			
Council Grant: ditto ... ..	16	1	3			
				23	19	5
Clerk's Wages ... ..	40	4	0			
Postage and Telegrams ... ..	80	18	7			
Carriage of Parcels ... ..	2	12	9			
Stationery (Spottiswoode & Co.) ... ..	3	11	4			
Stationery and Office Expenses ... ..	5	11	4			
Envelopes for storing Photographs ... ..	3	13	0			
Address to Sir G. Stokes ... ..	3	18	6			
				140	9	6
Expenses of Meetings ... ..	20	0	0			
Lantern Expenses ... ..	6	6	8			
Time Signal: Rental of Wire (1898 and 1899) ... ..	10	0	0			
				36	6	8
House Expenses ... ..	68	8	10			
Coals and Gas ... ..	44	3	10			
Electric Lighting ... ..	5	19	10			
Furniture, &c. ... ..	17	8	0			
Sundry Fittings and Repairs ... ..	7	12	8			
Sundries ... ..	4	8	8			
				148	1	10
Dallmeyer & Co., for two Abney Lenses ... ..				22	13	9
Lee and Janson Fund Grant ... ..				5	0	0
Invested (see separate Account) ... ..	64	9	3			
Interest from Brokers invested (see separate Account) ... ..	18	11	7			
				83	0	10
Cheque-book and Deductions on Cheques ... ..				0	10	1
Balances, 1899 December 31:—						
At Bankers', as per Pass-book ... ..	400	10	2			
Cheques not credited till 1900 ... ..	6	6	0			
In hand of Assistant Secretary on account of Council Grant for Purchase of Books	8	18	9			
In hand of Assistant Secretary on Petty Cash Account ... ..	18	11	3			
				434	6	2
Cheques outstanding 1898 December 31 ... ..				14	9	6
				£2,339	8	4
				Y 2		

*Treasurer's Account of the Sale  
ordered by the Council*

		£	s.	d.	£	s.	d.
Aug. 10.	To Sale of £13,200 Consolidated 2 $\frac{3}{4}$ - per-cent. Annuities @ 105 $\frac{3}{8}$	...	13,909	10	0		
	Power of Attorney and Stamp	...	0	15	0		
			<hr/>		13,908	15	0
Aug. 15.	To Cash	...	59	16	0		
Oct. 13.	To Interest, 3 per cent. on £1,730 4 6 (Gas Light and Coke Company Stock deferred), Aug. 16 to Oct. 13		8	4	10		
Oct. 27.	To Interest, 3 per cent. on £1,747 5 3 (Stock purchased but not de- livered), Aug. 16 to Oct. 27	...	10	6	9		
Oct. 31.	To Cash	...	4	13	3		
			<hr/>		83	0	10

---



---

£13,991 15 10

*of Consols and Reinvestment,*  
1899 June 9.

1899. By purchase of—	£	s.	d.	£	s.	d.
£3,200 London and North-Western Rail- way 3-per-cent. Debenture Stock @ 111 $\frac{1}{4}$ ... ..	3,560	0	0			
Stamp, Brokerage, &c. ... ..	27	1	6			
	<hr/>			3,587	1	6
£3,600 Midland Railway 2 $\frac{1}{2}$ -per-cent. Debenture Stock @ 94 ... ..	3,384	0	0			
Stamp, Brokerage, &c. ... ..	25	12	9			
	<hr/>			3,409	12	9
£3,400 East Indian Railway 3-per-cent. Debenture Stock @ 102 ... ..	3,468	0	0			
Stamp, Brokerage, &c. ... ..	26	7	0			
	<hr/>			3,494	7	0
£1,700 Gas Light and Coke Company 3-per-cent. Debenture Stock @ 101... ..	1,717	0	0			
Stamp, Brokerage, &c. ... ..	13	4	6			
	<hr/>			1,730	4	6
£160 Gas Light and Coke Company 3-per-cent. Debenture Stock @ 101... ..	161	12	0			
Stamp, Brokerage, &c. ... ..	1	14	10			
	<hr/>			163	6	10
£1,100 Commercial Gas Company 4 $\frac{1}{2}$ - per-cent. Debenture Stock @ 145 ... ..	1,595	0	0			
Stamp, Brokerage, &c. ... ..	12	3	3			
	<hr/>			1,607	3	3
				<hr/>		
				£13,991	15	10
				<hr/>		

*Report of the Auditors.*

We have examined the Treasurer's accounts for the year 1899, and have found and certified the same to be correct. The cash in hand on December 31, 1899, including the balance at the bankers', &c., amounted to £434 6s. 2d.

During the past year considerable changes have been made in the investments of the Society, particulars of which are set forth in the account accompanying this report.

The books, instruments, and other effects in the possession of the Society have been examined, and they appear to be in a satisfactory condition.

We have laid on the table a list of the names of those Fellows who are in arrear for sums due at the last Annual General Meeting of the Society, with the amount due against each Fellow's name.

(Signed) RICHARD INWARDS,  
W. B. GIBBS.

*Trust Funds.*

*The Turnor Fund:* A sum of £464 18s. East Indian Railway 3-per-cent. Debenture Stock; the interest to be used in the purchase of books for the Library.

*The Horrox Memorial Fund:* A sum of £103 6s. East Indian Railway 3-per-cent. Debenture Stock; the interest to be used in the purchase of books for the Library.

*The Lee and Janson Fund:* A sum of £334 10s. 9d. East Indian Railway 3-per-cent. Debenture Stock; the interest to be given by the Council to the widow or orphan of any deceased Fellow of the Society who may stand in need of it.

*The Hannah Jackson (née Gwilt) Fund:* A sum of £309 18s. 6d. East Indian Railway 3-per-cent. Debenture Stock; the interest to be given in Medals or other awards, in accordance with the terms of the Trust.

*Assets and Present Property of the Society, 1900 January 1.*

	£	s.	d.	£	s.	d.
Balances, 1899 December 31 :—						
At Bankers', as per Pass-book	...	...	400	10	2	
Cheques not credited till 1900	...	...	6	6	0	
In hand of Assistant Secretary on account of Council Grant for purchase of books	...		8	18	9	
In hand of Assistant Secretary on Petty Cash Account	...	...	18	11	3	
			<hr/>			434 6 2
Due on account of Subscriptions :—						
3 Contributions of 5 years' standing	...	...	31	10	0	
6       "       4       "	...	...	50	8	0	
7       "       3       "	...	...	44	2	0	
31       "       2       "	...	...	130	4	0	
60       "       1       "	...	...	126	0	0	
2 Admission Fees and First Contributions	...		6	6	0	
			<hr/>			
			388	10	0	
Less 3 Contributions paid in advance	...		6	6	0	
			<hr/>			382 4 0
Due from Messrs. Williams and Norgate for sales of Publications during 1899						
£3,400 East Indian Railway 3-per-cent. Debenture Stock, including the Turnor Fund, the Horrox Memorial Fund, the Lee and Janson Fund, and the Hannah Jackson (née Gwilt) Fund.	...	...	...	...	...	32 19 10
£3,200 London and North Western Railway 3-per-cent. Debenture Stock.						
£3,600 Midland Railway 2½-per-cent. Debenture Stock.						
£1,860 Gas Light and Coke Co. 3-per-cent. Debenture Stock.						
£1,100 Commercial Gas Company 4½-per-cent. Debenture Stock.						
£1,250 Metropolitan 3-per-cent. Stock.						
£932 19 0 Metropolitan 2½-per-cent. Stock.						
Astronomical and other Manuscripts, Books, Prints, and Instruments.						
Furniture, &c.						
Stock of Publications of the Society.						
Two Gold Medals.						

Stock in hand of volumes of the *Memoirs* :—

Vol.	At Society's Rooms	At Williams & Norgate's	Vol.	At Society's Rooms	At Williams & Norgate's
I. Part 1	7	...	XXXI.	134	...
I. Part 2	41	...	XXXII.	145	...
II. Part 1	50	3	XXXIII.	154	...
II. Part 2	16	3	XXXIV.	157	...
III. Part 1	65	1	XXXV.	104	2
III. Part 2	82	1	XXXVI.	187	8
IV. Part 1	78	3	XXXVII.	330	7
IV. Part 2	89	3	XXXVII. Part 1	278	8
V.	100	3	XXXVII. Part 2	263	1
VI.	117	6	XXXVIII.	228	3
VII.	140	3	XXXIX. Part 1	233	3
VIII.	124	3	XXXIX. Part 2	248	...
IX.	130	3	XL.	395	1
X.	142	...	XLI.	224	3
XI.	148	...	XLII.	223	...
XII.	153	...	XLIII.	206	1
XIII.	153	...	XLIV.	238	...
XIV.	360	...	XLV.	214	2
XV.	134	...	XLVI.	XLVII. Part 1	3
XVI.	157	1	XLVII. Part 2	18	...
XVII.	140	1	XLVII. Part 3	2	...
XVIII.	133	1	XLVII. Part 4	10	...
XIX.	143	...	XLVII. Part 5	8	...
XX.	133	1	XLVII. Part 6	9	...
XXI. Part 1	244	...	XLVII.	197	1
XXI. Part 2	98	...	XLVIII. Pt. 1	227	2
XXI. 1 & 2 (together)	54	...	XLVIII. Pt. 2	231	1
XXII.	157	...	XLIX. Part 1	363	...
XXIII.	142	...	XLIX. Part 2	241	...
XXIV.	147	1	L.	235	1
XXV.	153	...	LI.	271	1
XXVI.	163	1	LII.	365	1
XXVII.	417	1	LIII.	394	4
XXVIII.	372	...	Index to <i>Memoirs</i> }	619	1
XXIX.	395	1			
XXX.	147	1			



Stock in hand of volumes of the *Monthly Notices*.—

Vol.	At Society's Rooms	At Williams & Norgate's	Vol.	At Society's Rooms	At Williams & Norgate's
I.	54	...	XXXII.	106	5
II.	58	...	XXXIII.	90	...
III.	...	...	XXXIV.	65	1
IV.	...	...	XXXV.	51	...
V.	...	...	XXXVI.	26	1
VI.	42	...	XXXVII.	31	3
VII.	2	...	XXXVIII.	95	2
VIII.	152	2	XXXIX.	95	...
IX.	24	3	XL.	104	3
X.	171	1	XLI.	103	5
XI.	183	...	XLII.	112	1
XII.	105	2	XLIII.	108	2
XIII.	176	2	XLIV.	111	2
XIV.	175	3	XLV.	115	1
XV.	167	2	XLVI.	108	...
XVI.	154	1	XLVII.	124	2
XVII.	165	1	XLVIII.	118	...
XVIII.	242	...	XLIX.	109	7
XIX.	51	...	L.	109	10
XX.	31	...	LI.	110	8
XXI.	16	...	LII.	108	11
XXII.	30	...	LIII.	112	14
XXIII.	17	...	LIV.	112	14
XXIV.	22	...	LV.	125	...
XXV.	13	...	LVI.	124	3
XXVI.	9	...	LVII.	130	3
XXVII.	3	...	LVIII.	128	7
XXVIII.	70	...	LIX.	132	7
XXIX.	50	...	1st Index ...	543	2
XXX.	61	2	2nd „ ...	800	...
XXXI.	90	...			

LIBRARY CATALOGUE    ...    ...    ...    ...    547    ...

In addition to the above volumes of the *Monthly Notices*, the Society has a considerable stock of separate numbers of nearly all the volumes. With the exception, however, of Vols. XXXVI. to LIX., no complete volumes can be formed from the separate numbers in stock.

*Celestial Photographs.*

The following is a list of reproductions of Celestial Photographs published by the Royal Astronomical Society for sale to the Fellows :—

R.A.S. Ref. No.	Subject.	Photographed by
1	Total Solar Eclipse, 1889 January 1	W. H. Pickering
2	Total Solar Eclipse, 1893 April 16	J. M. Schaeberle
3	Total Solar Eclipse, 1886 August 29	A. Schuster
4	Nebulæ in the <i>Pleiades</i>	Isaac Roberts
5	Nebula M 74 <i>Piscium</i>	Isaac Roberts
6	Great Nebula in <i>Orion</i>	Isaac Roberts
7	Milky Way near M 11	E. E. Barnard
8	Milky Way near Cluster in <i>Perseus</i>	E. E. Barnard
9	Comet <i>c</i> 1893 IV. (Brooks), 1893 October 21	E. E. Barnard
10	Comet <i>a</i> 1892 I. (Swift), 1892 April 7	E. E. Barnard
11	Nebula about $\eta$ <i>Argûs</i>	David Gill
12	Portion of Moon (Hyginus-Albategnius)	Lœwy and Puiseux
13	Comet <i>c</i> 1893 IV. (Brooks), 1893 October 22	E. E. Barnard
14	Comet <i>c</i> 1893 IV. (Brooks), 1893 October 20	E. E. Barnard
15	Comet <i>c</i> 1893 IV. (Brooks), 1893 November 10	E. E. Barnard
16	Comet <i>a</i> 1892 I. (Swift), 1892 April 26	E. E. Barnard
17	Comet <i>f</i> 1892 III. (Holmes), 1892 November 10	E. E. Barnard
18	Comet <i>a</i> 1892 I. (Swift), 1892 April 18	E. E. Barnard
19	Portion of Moon (Alps, Apennines, &c.)	Lœwy and Puiseux
20	Nebula in <i>Andromeda</i>	Isaac Roberts
21	<i>Jupiter</i> , 1892 September 26	Lick Observatory
22	Cluster M 13 <i>Herculis</i>	W. E. Wilson
23	Total Solar Eclipse, 1893 April 16 (5 sec.)	J. Kearney
24	Total Solar Eclipse, 1893 April 16 (20 sec.)	J. Kearney
25	The Moon (Age 7 <sup>d</sup> 3 <sup>h</sup> )	Lick Observatory
26	The Moon (Age 12 <sup>d</sup> 6½ <sup>h</sup> )	Lick Observatory
27	The Moon (Age 16 <sup>d</sup> 18 <sup>h</sup> )	Lick Observatory
28	The Moon (Age 23 <sup>d</sup> 8 <sup>h</sup> )	Lick Observatory
29	The Sun, 1892 February 13	Roy. Obs., Greenwich
30	The Sun, 1892 July 8	Roy. Obs., Greenwich
31	Portion of Moon (Region of <i>Maginus</i> )	Lœwy and Puiseux
32	The Moon (Age 14 <sup>d</sup> 1 <sup>h</sup> )	Lick Observatory

R.A.S. Ref. No.	Subject.	Photographed by
33	Portion of Moon (Ptolemæus, &c.)	Lick Observatory
34	Portion of Moon (Mare Serenitatis)	Lick Observatory
35	Portion of Moon (Clavius, Licetus, &c.)	Lick Observatory
36	Portion of Moon (Regiomontanus, &c.)	Lick Observatory
37	Portion of Moon (Tycho, Thebit, &c.)	Lick Observatory
38	Portion of Moon (Theophilus, &c.)	Lick Observatory
39	Total Solar Eclipse, 1896 August 9 (3 sec.)	S. Kostinsky
40	Total Solar Eclipse, 1896 August 9 (26 sec.)	A. Hansky
41	Cluster M 56 <i>Lyræ</i>	
42	Nebulæ M 81, 82 <i>Ursæ Majoris</i>	
43	Cluster M 56 <i>Lyræ</i> (enlarged)	
44	Solar Corona, 1871 December 12, Baikul	H. Davis
45	Solar Corona, 1875 April 6, Siam	Lockyer and Schuster
46	Solar Corona, 1878 July 29, Wyoming	W. Harkness
47	Solar Corona, 1882 May 17, Egypt	Abney and Schuster
48	Solar Corona, 1883 May 6, Caroline Island	Lawrance and Woods
49	Solar Corona, 1885 September 9, Wellington, N.Z.	Radford
50	Solar Corona, 1886 August 29, Grenada, W.I.	A. Schuster
51	Solar Corona, 1887 August 19, Japan	M. Sugiyama
52	Solar Corona, 1889 January 1, California	W. H. Pickering
53	Solar Corona, 1889 December 22, Cayenne	J. M. Schaeberle
54	Solar Corona, 1893 April 16, Fundium	J. Kearney
55	Solar Corona, 1893 April 16, Brazil	A. Taylor
56	Great Nebula in <i>Orion</i>	W. E. Wilson
57	Dumb-bell Nebula, <i>Vulpecula</i>	W. E. Wilson
58	Spiral Nebula, <i>Canes Venatici</i>	W. E. Wilson
59	Spiral Nebula, <i>Canes Venatici</i> (enlarged)	W. E. Wilson
60	Annular Nebula in <i>Lyra</i>	W. E. Wilson
61	Meteor Trail and Comet Brooks, 1893 November 13	E. E. Barnard
62	Total Solar Eclipse, 1898 January 22 (5 sec.)	W. H. M. Christie
63	Total Solar Eclipse, 1898 January 22 (20 sec.)	W. H. M. Christie
64	Solar Corona, 1896 August 9, Novaya Zemlya	G. Baden-Powell
65	Solar Corona, 1898 January 22, Pulgaon, India	E. H. Hills
66	Nebula in <i>Andromeda</i>	Roy. Obs., Greenwich
67	Spectrum of Sun's limb, 1898 January 22	E. H. Hills
68	Annular Nebula, <i>Lyra</i>	Lick Observatory
69	Dumb-bell Nebula, <i>Vulpecula</i>	Lick Observatory
70	Spiral Nebula, <i>Canes Venatici</i>	Lick Observatory
71	Spiral Nebula, <i>Ursa Major</i>	Lick Observatory

R.A.S. Ref. No.	Subject.	Photographed by
72	Trifid Nebula, <i>Sagittarius</i>	Lick Observatory
73	Great Nebula in <i>Orion</i>	Lick Observatory
74	Cluster M 13 <i>Herculis</i>	Lick Observatory
75	Solar Surface with Faculæ	G. E. Hale
76	Faculæ and Prominences	G. E. Hale
77	Total Solar Eclipse, 1898 Jan. 22 ( $\frac{2}{3}$ sec.)	W. H. M. Christie
78	Nebula H V. 14 <i>Cygni</i>	W. E. Wilson

Nos. 44-55 and Nos. 64 and 65 form a series of corona photographs, oriented and reduced to the same scale.

The above photographs are now on sale to Fellows as prints, either platinotype or aristotype, mounted on sunk cut-out mounts, measuring 12 inches by 10 inches, and also as lantern slides. Nos. 44-55 and Nos. 64 and 65 are also supplied as transparencies,  $6\frac{1}{4}$  inches square.

Price of prints, 1s. 6d. each; lantern slides, 1s. each; packing and postage extra.

Unmounted prints, 1s. each, can be obtained to order.

Transparencies,  $6\frac{1}{4}$  inches square (Nos. 44-55 and Nos. 64 and 65), 3s. 6d. each.

Orders to be addressed to W. H. Wesley, Burlington House, London, W. In ordering prints or slides the R.A.S. Reference No. only need be quoted, but in the case of prints it should be stated whether platinotypes or aristotypes are required.

---

### *Instruments belonging to the Society.*

A brief description of the chief instruments and other particulars relating to them will be found in *Monthly Notices*, vol. xxxvi. p. 126.

- No. 1. The *Harrison* clock.
- „ 2. The *Owen* portable circles, by Jones.
- „ 3. The *Beaufoy* circle.
- „ 4. The *Beaufoy* transit instrument.
- „ 5. The *Herschel* 7-foot telescope.
- „ 6. The *Greig* universal instrument, by Reichenbach and Ertel. The transit telescope, by Utzschneider and Fraunhofer, of Munich.
- „ 7. The *Smeaton* equatorial.
- „ 8. The *Cavendish* apparatus.
- „ 9. The 7-foot Gregorian telescope (late Mr. Shearman's).
- „ 10. The variation transit instrument (late Mr. Shearman's).
- „ 11. The universal quadrat, by Abraham Sharp.

- No. 12. The *Fuller* theodolite.
- „ 13. The standard scale, by Troughton and Simms.
- „ 14. The *Beaufoy* clock, No. 1.
- „ 15. The *Beaufoy* clock, No. 2.
- „ 16. The *Wollaston* telescope.
- „ 17. The *Lee* circle.
- „ 18. The *Sharpe* reflecting circle.
- „ 19. The *Brisbane* circle.
- „ 20. The *Baker* universal equatorial.
- „ 21. The *Reade* transit.
- „ 22. The *Matthew* equatorial, by Cooke.
- „ 23. The *Matthew* transit instrument.
- „ 24. The *South* transit instrument.
- „ 25. A sextant, by Bird (formerly belonging to Captain Cook).
- „ 26. A globe showing the precession of the equinoxes.  
The *Sheepshanks* collection :—
- „ 27. (1) 30-inch transit instrument, by Simms, with level and two iron stands.
- „ 28. (2) 6-inch transit theodolite, with circles divided on silver; reading microscopes, both for altitude and azimuth; cross and siding levels; magnetic needle; plumb-line; portable clamping foot and tripod stand.
- „ 29. (3) Equatorial stand and clock movement for  $4\frac{6}{10}$ -inch telescope (telescope lost); double-image micrometer; two wire micrometers; object-glass micrometer.
- „ 30. (4)  $3\frac{1}{4}$ -inch achromatic telescope, with equatorial stand; double-image micrometer; one terrestrial and three astronomical eyepieces.
- „ 31. (5)  $2\frac{3}{4}$ -inch achromatic telescope, with stand; one terrestrial and three astronomical eyepieces.
- „ 33. (7) 2-foot navy telescope.
- „ 34. (8) Transit instrument of 45 inches focal length, with iron stand and also Y's for fixing to stone piers; two axis levels.
- „ 35. (9) Repeating theodolite, by Ertel, with folding tripod stand.
- „ 36. (10) 8-inch pillar sextant, by Troughton, divided on platinum, with counterpoise stand and artificial horizon.
- „ 37. (11) Portable zenith telescope and stand,  $2\frac{3}{4}$ -inch aperture and 26 inches focal length; 10-inch horizontal circle and 8-inch vertical circle, reading to 10'' by two verniers to each circle.
- „ 38. (12) 18-inch Borda repeating circle, by Troughton,  $2\frac{1}{8}$ -inch aperture and 24 inches focal length; the circles divided on silver, the horizontal circle being read by four verniers, and the vertical circle by three verniers, each to 10''.
- „ 39. (13) 8-inch vertical repeating circle, with diagonal telescope,

by Troughton and Simms ; circle divided on silver, reading to  $10''$  ; a 5-inch circle at eye-end, reading to single minutes ; horizontal circle 9 inches diameter in brass to single minutes.

- No. 40. (14) A set of surveying instruments, consisting of a 12-inch theodolite for horizontal angles only, reading to  $10''$  ; two sets of adjusting plates ; tripod stand with enclosed telescope ; heavy stand for theodolite ; Y-piece of level ; two large and three small ground-glass bubbles divided ; level collimator, object-glass  $1\frac{7}{8}$ -inch diameter and 16 inches focal length ; micrometer eyepiece, comb, and wires ; mercury bottle and trough.
- „ 41. (15) Level collimator, with object-glass  $1\frac{7}{8}$ -inch diameter and 16 inches focal length ; stand, rider-level, and fittings.
- „ 42. (16) 10-inch reflecting circle by Troughton, reading by three verniers to  $20''$  ; counterpoise stand ; artificial horizon, with mercury ; two tripod stands.
- „ 43. (17) Hassler's reflecting circle, by Troughton, with counterpoise stand.
- „ 44. (18) 6-inch reflecting and repeating circle, by Troughton and Simms, contained in three boxes, two of which form stands. Circle divided on silver, reading to single minutes ; two inside arcs divided to single degrees, 150 degrees on each side ; artificial horizon and mercury.
- „ 45. (19) 5-inch reflecting and repeating circle, by Lenoir, of Paris.
- „ 46. (20) Reflecting circle, by Jecker, of Paris, 11 inches in diameter, with one vernier reading to  $15''$ .
- „ 47. (21) Box sextant ; reflecting plane and level.
- „ 48. (22) Prismatic compass, by Troughton and Simms.
- „ 49. (23) Mountain barometer.
- „ 50. (24) Prismatic compass, by Thomas Jones, mounted with a cylindrical lens.
- „ 51. (25) Ordinary  $4\frac{1}{2}$ -inch compass with needle.
- „ 52. (26) Dipping needle, by Robinson.
- „ 53. (27) Compass needle, mounted for variation.
- „ 54. (28) Magnetic intensity needle, by Meyerstein, of Göttingen ; a strongly fitted brass box with heavy magnet ; filar suspension.
- „ 55. (29) Box of magnetic apparatus.
- „ 56. (30) Hassler's reflecting circle, by Troughton ; a  $10\frac{1}{2}$ -inch reflecting and repeating circle, with stand and counterpoise, divided on platinum with two movable and two fixed indices ; four verniers reading to  $10''$ .
- „ 57. (31) Box sextant and glass plane artificial horizon, by Troughton and Simms.
- „ 58. (32) Plane  $2\frac{3}{8}$ -inch speculum, artificial horizon and stand.
- „ 59. (33)  $2\frac{1}{2}$ -inch circular level horizon, by Dollond.



- No. 60. (34) Artificial horizon, roof, and trough; the trough  $8\frac{1}{4}$  by  $4\frac{1}{2}$  inches; tripod stand.
- „ 61. (35) Set of drawing instruments, consisting of 6-inch circular protractor and common protractor, T-square; one beam compass.
- „ 62. (36) A pantograph.
- „ 63. (37) A noddy.
- „ 64. (38) A small Galilean telescope with object-glass of rock crystal.
- „ 65. (39) Five levels.
- „ 66. (40) 18-inch celestial globe.
- „ 67. (41) Varley stand for telescope.
- „ 69. (43) Telescope, with object-glass of rock crystal.
- „ 71. Portable altazimuth tripod.
- „ 72. Four polarimeters.
- „ 74. Registering spectroscope, with one large prism.
- „ 76. Two five-prism direct-vision spectroscopes.
- „ 78.  $9\frac{1}{4}$ -inch silvered-glass reflector and stand, by Browning.
- „ 79. Spectroscope.
- „ 80. A small box, containing three square-headed Nicol's prisms; two Babinet's compensators; two double-image prisms; three Savarts; one positive eyepiece, with Nicol's prism; one dark wedge.
- „ 81. A back-staff, or Davis' quadrant.
- „ 82. A nocturnal or star dial.
- „ 83. An early non-achromatic telescope, of about 3 feet focal length, in oak tube, by Samuel Scatliffe, London.
- „ 84. A Hollis observing chair.
- „ 85. Double-image micrometer, by Troughton and Simms.
- „ 86.  $4\frac{1}{2}$ -inch Gregorian reflecting telescope, by Short, with altazimuth stand and 6-inch altitude and azimuth circles and two eyepieces.
- „ 87.  $3\frac{1}{4}$ -inch Gregorian reflecting telescope with wooden tripod stand.
- „ 88. Pendulum, with 5-foot brass suspension rod, working on knife-edges, by Thomas Jones.
- „ 89. A Rhabdological Abacus. A contrivance invented by Mr. H. Goodwyn, consisting of a box filled with compartments, in which are square rods covered with numbers, which can be arranged so as to facilitate the labour of multiplying high numbers.
- „ 90. An Arabic celestial globe of bronze,  $5\frac{3}{4}$  inches in diameter.
- „ 91. Astronomical time watch-case, by Professor Chevallier.
- „ 92. 2-foot protractor, with two movable arms, and vernier.
- „ 93. Beam compass, in box.
- „ 94. 2-foot navigation scale.
- „ 95. Stand for testing measures of length.
- „ 96. Artificial planet and star, for testing the measurement of a fixed distance at different position angles.

- No. 97. 12-cell Leclanché battery.
- „ 98. 2-foot 6-inch navy telescope, with object glass  $2\frac{1}{2}$  inches, by Cooke, with portable wooden tripod stand.
- „ 99. 12-inch transit instrument, by Fayrer and Son, with level and portable stand.
- „ 100. 9-inch transit instrument, with level and iron stand.
- „ 101. Small equatorial sight instrument, by G. Adams, London.
- „ 102. Sun-dial, by Troughton.
- „ 103. Sun-dial, by Casella.
- „ 104. Sun-dial.
- „ 105. Box sextant, by Troughton and Simms.
- „ 106. Prismatic compass, by Schmalcalder, London.
- „ 107. Compass, by C. Earle, Melbourne.
- „ 108. Prismatic compass, by Negretti and Zambra.
- „ 109. Dipleidoscope, by E. Dent.
- „ 110. Abney level, by Elliott.
- „ 111. Pocket spectroscope, by Browning.
- „ 112. Universal sun-dial.
- „ 113. Double sextant, by Jones.
- „ 114. Two models, illustrating the effects of circular motions.
- „ 115. A cometarium.
- „ 117. Two old sun-dials.
- „ 118. A  $10\frac{1}{2}$ -inch sixteenth-century celestial globe, on bronze tripod stand.
- „ 119. Specimens of diffraction gratings, by Prof. W. A. Rogers.
- „ 120. A 6-prism spectroscope, by Browning.
- „ 121. Spitta's improved maximum and minimum thermometer.
- „ 122. A 6-inch speculum, with flat; the speculum said to be by Sir W. Herschel, and re-figured by Sir J. Herschel.
- „ 123. A 6-inch refracting telescope, by Grubb, with 3 eyepieces.
- „ 124. Position micrometer, by Cooke.
- „ 125. A 6-inch refracting telescope, by Simms, with eyepieces and solar diagonal.
- „ 126.  $3\frac{1}{2}$ -inch portable refracting telescope, by Tulley, with tripod stand.
- „ 127. Globe representing the visible surface of the Moon, by John Russell, R.A. (1797).
- „ 128. Bichromate battery and Ruhmkorff coil.
- „ 129. Slater's improved armillary sphere.
- „ 130. 10-inch brass pillar sextant with counterpoise stand, by Troughton.
- „ 131. Double box sextant, by Cary.
- „ 132. Equatorially mounted camera with  $2\frac{1}{2}$ -inch portrait lens and telephotographic enlarging lens by Dallmeyer; iron pillar. [Presented by the executors of the late Sidney Waters.]
- „ 133.  $3\frac{1}{4}$ -inch equatorial by Ross, with tall tripod stand, equa-



torial mounting, eyepieces, and micrometer. [Presented by Mrs. Mann.]

No. 134. Old transit instrument, 2-inch aperture and 3-feet focal length, formerly belonging to Dr. Longfield, of Cork. [Presented by the executors of the late R. J. Lecky.]

„ 135. Globe of Mars, by E. M. Antoniadi. [Presented by M. Antoniadi.]

Besides the above, there is the following apparatus available for eclipse work :—

- 4 Slits for spectroscope.
- 2 Abney lenses used in photographing the corona.
- 2 Dallmeyer negative enlarging lenses.
- 1 Cœlostæt with 16-inch plane mirror.

The following instruments are lent, during the pleasure of the Council, to the undermentioned persons :—

- No. 4. The *Beaufoy* transit instrument, to the Observatory, Kingston, Canada.
- „ 16. The *Wollaston* telescope, to Mr. R. Inwards.
- „ 23. The *Matthew* transit, to Captain W. Noble.
- „ 28. (2) 6-inch theodolite and stand, to Dr. A. A. Common.
- „ 29. (3) Equatorial mounting, clock, &c., to the Rev. C. D. P. Davies.
- „ „ Wire micrometer (No. 2), to the Rev. C. D. P. Davies.
- „ 30. (4)  $3\frac{1}{4}$ -inch equatorial and stand, to Mr. C. H. Johns.
- „ „ Double-image micrometer, to the Rev. W. J. B. Roome.
- „ 50. (24) Prismatic compass, to Mr. Maxwell Hall.
- „ 57. (31) Box sextant, to Dr. A. A. Common.
- „ 69. (43) Telescope with rock-crystal object glass, to Sir W. Huggins.
- „ 72. (c) Polarimeter, to Professor C. Michie Smith.
- „ 74. Registering spectroscope, to Mr. Shackleton.
- „ 78.  $9\frac{1}{4}$ -inch reflector and stand, to the Rev. W. J. B. Roome.
- „ 98. 2-ft. 6-in. navy telescope, to the Rev. J. M. Bacon.
- „ 120. 6-prism spectroscope by Browning, to Mr. E. B. Knobel.
- „ 123. 6-inch telescope, by Grubb (object-glass only), to Mr. W. E. Wilson.
- „ 125. 6-inch refractor, by Simms, to Dr. A. A. Common.
- „ 128. Bichromate battery, to the Rev. W. J. B. Roome.
- „ 132. The *Waters* equatorial, to Mr. E. W. Maunder.
- „ 133.  $3\frac{1}{4}$ -in. equatorial, by Ross, to Mr. A. W. Roberts.

### *The Gold Medal.*

The Council have awarded the Society's Gold Medal to M. Henri Poincaré, for his researches in celestial mechanics. The President will lay before the Society the grounds upon which the award has been founded.

### *Publications of the Society.*

Vols. LII. and LIII. of the *Memoirs* have been published during the year.

Vol. LII. consists entirely of "Observations of twenty-three Variable Stars" by the late Mr. George Knott, and was edited by Professor H. H. Turner. The Council have pleasure in expressing their indebtedness to Mrs. Knott for her generous contribution towards the expenses of publication of these observations.

Vol. LIII. contains the following papers :—

Observations of the Solar Eclipse, 1896 August 8, by E. J. Stone.

Micrometrical measures of Double Stars, by W. Coleman.

Theory of the Motion of the Moon, chapters i-v., by Ernest W. Brown.

Determination of Terrestrial Longitudes by Photography, by Capt. E. H. Hills.

New values of the division errors of the Greenwich Transit Circle, by F. W. Dyson and W. G. Thackeray.

General Catalogue of the Radiant Points of Meteoric Showers, by W. F. Denning.

Double Star observations, 1895-98, by W. H. Maw.

### *Supplementary Library Catalogue.*

A supplementary catalogue of the Library has been prepared by the Assistant Secretary, which is now in the press, and will shortly be in the hands of the Fellows.